

PATENT APPLICATION
IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of
Shinobu HASEGAWA, et al.
Appln. No.: 09/833,815
Confirmation No.: 5723
Filed: April 13, 2001
For: ROLLER MEMBER

Docket No: Q64020
Group Art Unit: 3726
Examiner: Marc Quemel Jimenez

DECLARATION UNDER 37 C.F.R. §1.132

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

FILED

NOV 26 2003

Sir:

I, Shinobu Hasegawa, hereby declare and state:

THAT I am a citizen of Japan;

THAT I have graduated with a master's degree from Graduate School of Niigata University, Department of Science and Technology.

THAT since April, 1998, I have been employed Hokushin Kogyo CO. Ltd., the assignee of the above application. Since April 1999, I have been engaged in the development and manufacture of a roller member used for imparting a charge and developing.

THAT I am a co-inventor of the invention described and claimed in the above-identified application;

THAT I am familiar with the prosecution of the above-captioned application; and

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THAT the experimentation set forth below was conducted by me or under my direct supervision.

I hereby submit data substantiating that the unshrinkable sleeve (tube) used in the roller member of the present invention is substantially unshrinkable under heat, and thus can be distinguished from a shrinkable sleeve (tube).

Method of Measurement and Analysis of Data:

An unshrinkable sleeve (Sample 1) and a shrinkable sleeve (Sample 2) were individually tested in a thermal analyzer (TMA) operating in a tensile mode, whereby their heat shrinkage (%) was measured. Specifically, both ends of each sample were held by a chuck, and a tensile load was applied to the sample. The percent extension of each sample was measured along a circumferential direction. The results are shown in Fig. 1, attached hereto.

The test conditions were as follows:

Sample 1: Thin-wall, unshrinkable tube made of fluorocarbon resin PFA (NST; product of Gunze)

Sample length: 10 mm

Sample thickness: 0.075 mm

Tensile load: 2 g

Rate of temperature increase: 2°C/min.

Sample 2: Thin-wall, shrinkable tube made of fluorocarbon resin PFA (SMT; product of Gunze)

Sample length: 10 mm

Sample thickness: 0.075 mm

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Tensile load: 2 g

Rate of temperature increase: 2°C/min.

As shown in Fig. 1, when the shrinkable sleeve (Sample 2) was heated to 200°C, it shrank by about 4%, whereas when the substantially unshrinkable sleeve (Sample 1) was heated to 200°C, virtually no shrinkage was observed (i.e., shrinkage was less than about 1%). These results demonstrate that the thermal shrinkage (%) of a shrinkable sleeve is quite different from that of an unshrinkable sleeve, and that the unshrinkable sleeve is substantially not shrinkable under heat.

In this connection, as may be learned from the copy of Gunze Ltd.'s homepage attached hereto, the terminology "unshrinkable sleeve" is a technical term commonly used by those skilled in the art to contrast with "shrinkable sleeve."

I declare further that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issuing thereon.

Date: 2003.11.25

BY

Shinobu Hasegawa
SHINOBU HASEGAWA

Fig.1

